

Elsberg (Louis)

NEUROSES OF SENSATION OF THE PHARYNX
AND LARYNX, OR SENSORY NEUROSES
OF THE THROAT

BY

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LOUIS ELSBERG, M.D.

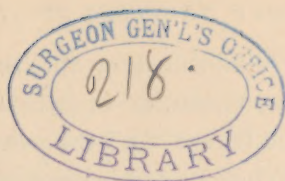
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PROFESSOR OF LARYNGOLOGY AND DISEASES OF THE THROAT IN DARTMOUTH MEDICAL
COLLEGE

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NEUROSES OF SENSATION OF THE PHARYNX
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SECTION I.—DEFINITION.

NEUROSIS of sensation of the throat¹ is defined to be functional—and not merely subordinately symptomatic—disordered sensibility of the throat. (I mean to use the word *functional* neither “unphysiologically” nor “irrationally”: it does not imply with me that there is no physical basis for the particular derangement of function, but that the structural change is either remote from the organ the function of which is deranged, or that it is molecular and not discernible with the means of observation at our command.) The definition is meant to exclude, on the one hand, cases of neuritis and observed alteration in nerve tissue of the throat; and, on the other, throat neuroses which have no other than a symptomatic significance, as the increased sensibility and painfulness in inflammatory

* By special appointment prepared for, and partially read before, the International Congress in London.

¹ The term “throat” is here used technically, to denote all the parts which at the present day the throat-specialist, or laryngologist, is called upon to treat: *par excellence*, therefore, the larynx and pharynx.

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affections, the diminished or abolished sensibility during narcosis and hypnotism, in anæsthetic lepra, and in connection with the failure of all the powers, such as during an epileptic fit, in cholera, and in approaching death from any cause, and the perverted sensibility occasioned by the actual presence of foreign bodies, tumors, etc., as well as the misinterpretations of sensibility which result from delusive conceptions in primary insanity.

SECTION II.—ANATOMICO—PHYSIOLOGICAL BASIS.

Many questions relating to the normal and pathological sensibility of the larynx, pharynx, and the other constituents of the throat are not yet definitely settled.

It is well known that normal sensation involves the integrity of three factors, viz., of the nerve ends which receive an impression, of the conducting substance which conveys the impression, and of the central organ which receives the impression afterward transformed into conscious sensation. My definition of sensory neuroses of the throat excludes the consideration of structural throat lesions, involving the peripheral sensitive nerves, and of the brain lesions of insanity. In all other cases, there must be affected either the extra-axial or intra-axial nerve tracts or the nuclei immediately connected with them. Investigators agree that the nerves with which we are concerned are mainly those that go to make up the pneumogastric, and, as to the fauces and pharynx, to a large extent, also, the glosso-pharyngeus. As is well known the larynx obtains its nerves of sensation almost exclusively from the superior laryngeal-nerve which emanates from the plexus gangliformis of the pneumogastric,—a plexus in which enter, besides the vagus, fibres from the accessory and hypoglossal nerves, and which receives anastomotic branches from the glosso-pharyngeus, the first cervical ganglion of the sym-

pathetic, and the cervical plexus. There are a few sensory filaments contained in the inferior laryngeal nerve, which are given off with the nervus arytaënoideus,—the terminal of one, namely, the external, of two branches (sometimes sets or bundles) into which the inferior laryngeal nerve divides. The immediate source of the sensory nerve supply of the pharynx is the pharyngeal plexus which is composed of the pharyngeal branches of the pneumogastric with which are mixed the pharyngeal branch of the glosso-pharyngeus and the sympathetic. The pneumogastric in connection with the glosso-pharyngeus supplies the inner sides of the palatine folds, the fauces and tonsils as well as the posterior side of the velum palati. The second branch of the fifth supplies the anterior face of the velum and the region of the pharyngeal orifice of the Eustachian tube and vault of the pharynx.

While, thus, the derivation of the sensitive nerves of the throat from these larger nerves is clear, of their connection through the nerve roots with their immediate centres, nothing positive is known. It has, however, been suggested to me by Dr. E. C. Spitzka, of New York, in a personal communication, that by a process of anatomical exclusion we may infer where their nuclear centre probably is. His reasoning is as follows: Taking the ninth, tenth, and eleventh pairs of cranial nerves, *i. e.*, the glosso-pharyngeal, pneumogastric, and spinal accessory, in the aggregate, it is found that they have in common three nuclei. These are, 1. a *sub-ependymal* nucleus, which experiment as well as several anatomical facts justify us in regarding as a nucleus for visceral innervation. 2. A large multipolar-celled nucleus, devoted presumably to the innervation of the laryngeal muscles. (Certain authors incline to the belief that this is really an origin of the hypoglossal nerve¹; and

¹ Laura, Mem. della reale academie delle scienze di Torino, serie 11, j. 31 and 32.

Krause¹ considers its relations so much in doubt that he terms it *nucleus ambiguus*, but there are no good reasons for refusing assent to the proposition of Meynert² that it contributes its efferent fibres to the oblongata-portion of the eleventh pair, in other words, to that part of these nerves which through its subsequent fusion with the tenth pair innervates the muscles of phonation.) 3. The *nucleus pharyngeus*,³ a mass of cells situated near the lateral field of the oblongata, which from its multipolar cells and the fact that it is found in best development in the levels of the ninth and tenth pairs is supposed to be devoted to the innervation of the pharyngeal muscles.

There is a fourth nucleus, viz., the gelatinous substance with small nerve cells scattered around the ascending root of the fifth pair. Now, as the sub-ependymal nucleus is probably visceral and the deep nuclei in all likelihood motor, the sensory innervations naturally fall to this nucleus, which is documented as a tactile and trophic centre by its relations to the great cranial tactile nerve, the fifth.

A fact which certainly strongly points to this conclusion is that while the spinal accessory nerve roots never pass through or receive accession from this fourth nucleus, the ninth and ten pairs do pass through and do receive such accession.⁴ Here then we may look for the tactile innervations of the larynx and pharynx, and the field from which certain reflexes are mediated to the motor nuclei. The analogy with the spinal reflex structure would thus be complete; for the gelatinous head of the posterior horn of the cord being homologous with the gelatinous nerve nucleus

¹ Krause, Allgem. und mikroskop. Anatomie. Hanover, 1876.

² Meynert, Vom Gehirne der Säugethiere. Stricker's Handbuch.

³ Spitzka, "Architecture of Brain," *Journal of Nervous and Mental Diseases*, 1880.

⁴ Meynert, *op. cit.*; Stilling, "Ueber die Textur der Medulla oblongata," Erlangen, 1842.; Spitzka, *loc. cit.*

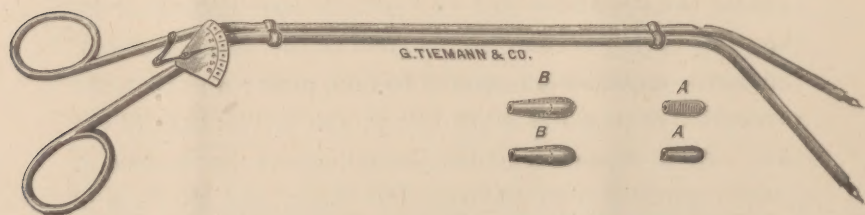
of the trigeminal root, the nuclei of the pharyngeal and laryngeal muscle-nerves being analogous to the anterior cornu and their efferent fibres analogous to the anterior root, the afferent fibres of the ninth and tenth pairs represent so many posterior root-fibres and complete the reflex arch. No opportunity for an autopsy where this nucleus might have been affected has occurred to me since Dr. Spitzka's suggestion; but in a case, which has turned out to be progressive paralytic dementia, in which for some time disease seemed to be confined mainly to this domain, we may possibly in the future have light thrown on this point by *post-mortem* examination.

The normal sensibility of the throat varies in different portions and in different persons, even at different times in the same person; nevertheless, there is some agreement within recognizable limits. The exceptional cases of hypersensitiveness and of want of sensitiveness met with, within the latitude of health, in performing laryngoscopy and various surgical operations, are not sufficient to disturb the rule. Excessive variations must be regarded as being abnormal.

The only published investigations as to the sensitiveness of the laryngeal mucous membrane are those of Pienaczek.¹ He found that temperature was distinctly appreciated; that while tactile perceptions were usually covered by the irritation which the touch of bodies caused, yet when habit had blunted the irritability and the reflexes were restrained by the parts having become accustomed to the touch, differential tactile appreciation seemed to take place; and that, the perception of pain was much less in the larynx than in the skin. After repeated similar examinations by means of various probes, blunt-pointed and sharp, and all sorts of throat instruments, metallic and of different materials, I

¹ Über die Empfindlichkeit der Larynxschleimhaut." *Medizinische Jahrbücher*, Vienna, 1878 p. 481.

can express myself in entire accord with Pienaczek, as far as he goes. I found the appreciation of temperature acute in every portion of the throat; next in distinctness of sensation were differences in pressure, and thereby, to a slight extent, consistence and form. Without going deeply into physiological disquisition, I must recall the interesting observations on acuteness of sensibility of different portions of the body made nearly half a century ago by E. H. Weber.¹ He measured the degree of sensibility by the distance between the two legs of a pair of compasses which different parts require in order that the two points make distinct impressions. Aside from the skin he examined the mouth, and found that at the tip of the tongue the two points were separately felt when only half a line apart, while on the dorsum and on the edge of the tongue (one inch from the tip) they had to be four lines apart, and that the mucous membrane of the hard palate required the distance to be six lines, and over the gums nine lines, before the sensation of two points and not of one was produced. Weber assumed that the difference of sensibility depends upon the number, course, and termination of the nerve filaments in the different portions. On account of the irritation, which touching the throat with any instrument usually produces, it is very difficult to arrive here at any accurate æsthesiometrical results. Somewhat after the model of Ziemssen's double laryngeal electrode, I have devised a con-



¹ *Annotat. Anat. et Physiol.*, pp. 44-81. Quoted by Dr. Johannes Müller, "Handbuch der Physiologie des Menschen." Coblenz, 1837, vol. i, p. 711.

venient throat æsthesiometer, which, as shown in the accompanying wood-cut, essentially consists of two rods properly bent, so connected together that their points can be easily approximated and separated, the distance being measured on a scale at the handle. A little way from the extremities, screw-threads commence for the purpose of carrying tips, some of which are metallic, marked *A* in the figure, while others are made of very soft rubber, marked *B*.

From investigations in a number of healthy persons I can state that the normal distances between two uncovered points of the æsthesiometer necessary for their distinct appreciation vary from $1\frac{1}{2}$ or 2 to $2\frac{1}{2}$ or 4 centimeters. This, of course, precludes the possibility of measuring by such distances the sensibility of very circumscribed spots. Besides, practice changes the distance, and the examination is by no means easy. More important than the examination of the distances is that of temperature and pressure. Normally very slight differences of temperature are appreciated. I examine these with my æsthesiometer, the two points mounted with metallic tips, each dipped into water of a different temperature (or otherwise heated and cooled), thus constituting a differential thermæsthesiometer. To measure appreciation of consistence, etc., *i. e.*, pressure, I use the soft-rubber tips. The application of electricity furnishes the best means of measuring the sensitiveness to pain. I discriminate between three different kinds of normal as well as abnormal sensibility of the throat, *viz.*: 1. *tactile*, by which temperature and pressure are appreciated; 2. *dolorous*, by which pain is appreciated; and, 3. *reflex*, from which result muscular contractions, such as cough, spasm, gagging, choking, etc., as well as intravascular and secretory phenomena. Each of these kinds of sensibility must be examined æsthesiometrically; the first, as I have above described; the second, by an elec-

trode, connected first with an induction machine and then with a constant battery, and also by a sharp-pointed probe, or my æsthesiometer uncovered; and the third by a blunt-pointed probe, or my æsthesiometer covered. Under the head of diagnosis I shall speak again of this examination, and especially of the examination of dolorous and reflex sensibility.

As to what I call dolorous sensibility, there has been some discussion whether or not the sensation of pain ought to be considered as a function of sensitive nerves. Anstie¹ insists that it ought not; but in spite of his verbal distinction that "it is not the *function* of sensitive nerves to convey the sensation of pain but only their *action* under the presence of extraordinary influences," I think it may be stated without fear of serious contradiction, that to mediate the appreciation of a certain amount of pain in response to appropriate impressions is their normal function, and that any alteration of this mediation, whether a diminution or an increase, beyond the limits of individual healthy variation, as well as a spontaneous sense of pain, constitutes a disorder of sensibility, *i. e.*, a dysæsthesia.

Krishaber² was the first who drew attention to the fact that the sensibility of the larynx is of two kinds, viz.: a common or general sensibility (which includes the two kinds I call tactile and dolorous) and a reflex or special sensibility, and that a sensory disorder may affect one or the other of these, or both; but I do not agree with him as to his definition of laryngeal reflex sensibility. He pointed out that if we cauterize the mucous membrane of the larynx, we provoke a number of noisy and painful inspiratory movements, convulsively closing the larynx, while expiration remains calm and deep. There is pain for some hours or minutes

¹ "Pharyngeal and Laryngeal Neuralgia." *Neuralgia and the Diseases that resemble it.* New York, ed. 1872, p. 113.

² *Dictionnaire Encyclop. des Sciences Méd.*, Dechambre. Paris, 1872, 2me serie, vol. i, p. 677.

according to the strength of the caustic, but *no cough*. If, instead of cauterizing, we carry a simple drop of water to the part, thus imitating what frequently happens in so-called "wrong swallowing"—swallowing the wrong way,—we also provoke convulsive movements of the laryngeal muscles, but the phenomena are entirely different from those in the former case. The most prominent phenomenon now is a violent cough, a cough hard and loud, for the production of which all the expiratory muscles are called into action; and while inspiration, though in the beginning of the paroxysm perhaps much embarrassed, soon becomes calm and normal, the cough continues as long as there is the least disagreeable sensation in the larynx. Only to the sensibility excited in the latter case Krishaber accorded the name reflex sensibility; that in the case of cauterization he regarded as the general or common sensibility; the first being followed, as he said, by tickling and cough, the latter by pain and local spasm; the first a special sensibility relating to an occasional function, the expulsion of matters from the air passages, being connected with expiration; the latter a general sensibility relating to a permanent function, the permeability of the *rima glottidis* (the perturbation of which can give rise to a formidable accident, closure of the air passages by spasm), being connected with inspiration. Now, although the discrimination which Krishaber made between expiratory and inspiratory convulsive movements is an important one, both phenomena are reflex. Not only both cough and spasm, but, as I have already stated, other muscular contractions and circulatory and secretory actions may result from excitation of the reflex sensibility of the throat.

Taking the three kinds of sensibility together, I have found in two persons out of three—and at my request Dr. Ephraim Cutter examined his own very tolerant throat and arrived at substantially similar results—that the angles of

the posterior wall of the pharynx just behind the posterior palatine folds, and the posterior wall of the larynx, are the most sensitive portions of the throat. Next comes the laryngeal face of the epiglottis, while the edge of the velum is the least sensitive. The different portions vary in the following order, viz.: 1. Angles of pharynx above described. 2. Posterior laryngeal wall and inter-arytenoid fold. 3. Laryngeal face of epiglottis. 4. Valleculæ and root of tongue. 5. Lower laryngeal cavity (when reachable). 6. Trachea (when reachable). 7. Lateral laryngeal walls. 8. Ventricle of Morgagni. 9. Arytenoid cartilages. 10. Pyriform sinuses. 11. Palatine folds. 12. Tonsil. 13. Glossal face of epiglottis. 14. Free edge of epiglottis. 15. Ary-epiglottic fold. 16. Fauces. 17. Lateral walls, and low down on the posterior wall, of pharynx. 18. Vocal bands. 19. Uvula. 20. Velum, on the sides. 21. Velum, in the centre and on the edges.

SECTION III.—CLASSIFICATION.

The various sensory neuroses of the throat have not hitherto been strictly differentiated. This has been mainly because the three different kinds of sensibility of the throat have not been clearly appreciated. Although they are frequently affected together, each kind may be diminished, increased, or perverted separately; and an exaltation of one kind may be combined with a diminution or perversion of another. The correct position, in the classification, of neuralgia seems to have presented difficulties to observers, and systematic authors on the subject, such as Ziemssen, Mackenzie, Jurasz, etc., have described it as a fourth disorder of sensibility, separate and distinct from anæsthesia, hyperæsthesia, and paræsthesia.

Comprising disordered sensibility under the name dysæsthesia, my classification, based on clinical observations, not formed only "from theoretical considerations," is as follows:

- A. In reference to quantity or degree of sensation.
- I. Diminished sensibility: Hypæsthesia.
 - 1. Anæsthesia.
 - 2. Analgesia (Analgia, Anodynia).
 - 3. Anæsthesia dolorosa.
 - 4. Tactile hypæsthesia and hypalgia.
 - 5. Reflex hypæsthesia.
 - II. Increased sensibility: Hyperæsthesia.
 - 1. Tactile hyperæsthesia.
 - 2. Hyperalgia (algæsthesia, hyperalgæsthesia).
 - Spontaneous. } Peripheral. } Constant.
 - From external impression. } In nerve trunk or } Paroxysmal or true neuralgia.
 - 3. Reflex hyperæsthesia.
 - Muscular effects. { Cough, choking, spasm, retching, gagging, etc.
 - Circulatory effects. { Flushing, paling.
 - Secretory effects.

DISORDERED SENSIBILITY:
DYSÆSTHESIA.

The perversions of sensibility are so various that it is impossible to classify them or to enumerate them all. There are, however, perversions of tactile, of dolorous, and of reflex sensibility. Among the first mentioned, the most frequent are the sensation of heat or burning the or pangs, a sense of coldness is very rare, but I have also seen that and the sensation of the touch of a foreign body, attention being given mainly to its shape and its weight or pressure. Patients describe all possible and impossible shapes and materials in endeavoring to give an account of the perverted sensations. I have sometimes thought most of them might be arranged under the three heads: 1. Spuriæsthesia, 2. Zoniæsthesia or strangæsthesia, and 3. Akandæsthesia; comprising under the first, the sensation of a bulky body, generally ball-shaped; under the second, a cincture or band feeling, a sense of constriction; and under the third, the sensation of a sharp-pointed body, piercing or cutting. I shall give a few further particulars when speaking of symptoms.

- B. In reference to quality or kind of sensation:
- III. Perverted sensibility: Paræsthesia.

SECTION IV.—OCCURRENCE.

a.—FREQUENCY.

“Anæsthesia, hyperæsthesia, paræsthesia, and neuralgia of the larynx undoubtedly may exist to a more or less well-marked extent, but whether they occur as separate and distinct affections, and are entitled to consideration as such, is certainly an open question. * * * That paralysis, due to any morbid condition of the superior laryngeal nerve, such as neuritis, pressure of tumors, diphtheria, etc., will produce loss of sensation in the parts to which the nerve is distributed is undoubtedly true; but so long as this disease is described as one which might possibly occur rather than one which has been clinically observed, it would seem that its introduction into a treatise on these affections would be something of a refinement in classification.” Such is the language of the most recent “Manual of Diseases of the Throat and Nose.”¹ The fact is that sensory neuroses of the throat, though relatively infrequent, are not of very rare occurrence. Excluding the cases not coming fully within my definition and the explanation given, I have had under observation *at least* 58, which I have classified as follows: *Hypæsthesia*, 10, viz., complete one-sided anæsthesia, with hypæsthesia of the other side, 1; analgesia, 2; anæsthesia dolorosa, 1; tactile and reflex hypæsthesia, 3; reflex, without tactile or dolorous, hypæsthesia, 1; hypæsthesia with localized hypersensitiveness to temperature, 1; tactile and reflex hypæsthesia with some hyperalgesia and paræsthesia, 1. *Hyperæsthesia*, 27, viz., tactile and reflex hyperæsthesia, 10; tactile without reflex hyperæsthesia, 1;

¹ By Francke Huntington Bosworth, A.M., M.D., New York, William Wood & Co., 1881, p. 328.

In the preface the author says the book embodies the results of an experience of nearly ten years and of over eight thousand cases. According to my personal experience, in such a number there ought to have occurred a score of unquestionable instances of sensory neurosis. Perhaps I must not omit to state that Dr. Bosworth's cases were mainly those of a hospital out-door clinic.

tactile and reflex hyperæsthesia, with hyperalgesia from only external impressions, 2; tactile and reflex hyperæsthesia, with algesia both spontaneous and from external impressions, 2; neuralgia, 9; reflex, with very little or no tactile and dolorous hyperæsthesia, 3. *Paræsthesia*, 21.

As to sex and age, there were 26 male and 32 female patients, of whom the three youngest were a girl of seven and a half and two boys of eight and nine years respectively, and the two oldest a woman of 58 and a man of 65 years. Altogether there were

Under 10 years, 3 cases, viz., 2 male and 1 female.									
Between 10 and 20	"	7	"	2	"	"	5	"	
" 20 " 30	"	13	"	5	"	"	8	"	
" 30 " 40	"	19	"	8	"	"	11	"	
" 40 " 50	"	11	"	5	"	"	6	"	
" 50 " 60	"	3	"	2	"	"	1	"	
Over 60	"	2	"	2	"	"			

The greatest number of both sexes were between 30 and 40 years old. The rise and fall as to age in the number of male patients is remarkably uniform. The number of females exceeds that of males in every decade except in those under 10 and over 50; the total excess is not more than 23 per cent., which is much less than is usually supposed to be the case in such neuroses.

b.—DISEASES OR PATHOLOGICAL CONDITIONS IN CONNECTION WITH WHICH SENSORY NEUROSES OF THE THROAT HAVE BEEN OBSERVED.

1. *Paralysis*.—Although the term paralysis embraces impairment of sensation as well as of motion, yet when used without qualification, only deranged muscular activity, either neuropathic or myopathic, is usually meant. Throat dysæsthesiæ, *i. e.*, anæsthesia, hyperæsthesia, and, to some extent, paræsthesia, occur in many cases of paralysis; they have been observed in cases of laryngeal paralysis from

disease or injury of the pneumogastric nerve. I have met with them very early in a case of progressive paralytic dementia, *i. e.*, paralysis of the insane, in the course or later stages of which disease they are known to every alienist. Krishaber has reported them in early, and Ziemssen in advanced, progressive bulbar paralysis, *i. e.*, Duchenne's progressive paralysis of the tongue, velum, palate, and lips, of which I have seen two cases, one of which I have watched from beginning to end.

I have had an unmistakable case of paralysis of the superior laryngeal nerve, which I have not included in the number of cases mentioned in this paper, because the notes of it—though a hospital case—are unfortunately mislaid. I have had an opportunity to observe a case of paralysis of central origin involving one side of the body and deglutition, breathing, and phonation as well as sensation of the throat.

In a case in which another surgeon had performed œsophagotomy for the successful removal of a set of artificial teeth, I found hypæsthesia and paræsthesia combined with paralysis of the inferior laryngeal nerve. Of the paralysis of hysteria, diphtheria, syphilis, etc., occurring in combination with these sensory neuroses, I need not here speak as I am about to take up these diseases separately.

Dr. A. H. Smith has made the ingenious suggestion that in some cases of paræsthesia "the phenomena might be explained by assuming that there was a slight paresis of some of the muscles of the throat, leaving others without sufficient antagonism."

2. *Hysteria, hypochondriasis, and neurasthenia.*—These morbid conditions, more than any other, are regarded as being connected with the dysæsthesiæ under consideration. Certainly nervous exhaustion, from excessive intellectual exertion or emotional or sexual excesses, masturbation,

etc.; the curious nervous condition called hypochondriasis or sometimes pathophobia or psychical hyperæsthesia; and the still more mysterious hydra-headed disorder called hysteria, give rise, directly or indirectly, to the most strange sensory neuroses; nevertheless a large proportion of the sufferers from throat dysæsthesiæ are not only not at all hysterical but also not in any way "nervous." According to Chairou, anæsthesia of the epiglottis and of the pharynx is so constantly present in hysteria that he regarded it as a pathognomonic sign. Sawyer also insisted on the frequency of its occurrence. On the other hand, Mackenzie said he had observed slightly diminished sensibility of the pharynx, but never that the mucous membrane of the larynx was at all obtuse to direct impressions; whilst Semon, Mackenzie's German editor, acknowledges that he has seen it in several cases, though not in every case.

The truth is, anæsthesia is by no means the most frequent disordered throat sensation which is met with in hysteria. Thaon found it in about one sixth of the cases. Hyperæsthesia, as well as paræsthesia, are far more frequent. To the latter belongs the well known *globus hystericus*.

3. *Chlorosis and anæmia*.—Closely related to the cases of nervous exhaustion in which sensory neuroses of the throat occur, are those of chlorosis and anæmia; the former especially connected with menstrual troubles; the latter, in both sexes, after great loss of blood, after severe illness, etc. The forms usually met with are those of hypæsthesia or else neuralgia, but occasionally also tactile and reflex hyperæsthesia and paræsthesia.

4. *Diphtheria, syphilis, and malaria*.—The fact that more or less complete anæsthesia of the throat may follow in the wake of diphtheria has long been known. Careful and accurate observations as to this condition, were, however, first made by Ziemssen, afterward by Schnitzler.

Paræsthesia may accompany hypæsthesia. As to syphilis, Ott has published a detailed account of an interesting case.

I have had under my care a case of localized painful hypæsthesia—anaesthesia dolorosa—and another of neuralgia, in both of which no other cause could be recognized than malaria.

5. *Drug poisoning*.—Aside from general anæsthetics and narcotics, there are drugs which affect the sensibility of the throat. The paræsthesia produced by some, as for instance, the sensation of dryness by belladonna, of tingling by aconite, of constriction by nux vomica, etc., are well known. Bromides produce hypæsthesia of the throat, and in a case of saturnine aphonia which I have treated, there was said to be anæsthesia of the throat, which, unfortunately, however, I did not sufficiently carefully examine to record.

6. *Genito-urinary, pulmonary, and other diseases*.—Disordered sensations of the throat sometimes depend upon disease in other portions of the body. Cases in which this occurs are of two kinds: those in which a special nervous connection between the organ affected and the throat is known to exist, and those in which such a connection cannot be traced. A common instance of the first kind is a throat dysæsthesia from ear trouble. A still more frequently observed instance of the second is a throat dysæsthesia from genito-urinary, particularly uterine, disease. The first is generally supposed to be easily explicable as a "reflex," starting from the auricular branches and ending with the sensitive laryngeal branches of the pneumogastric nerve; while the second is admitted to be a recondite sympathy. But the first is not always easy of explanation: for, a reflex action such as this would be opposed to received physiological principles. As Hart has shown,¹ for a reflex action

¹ *Practitioner*, London, July, 1878, p. 342.

afferent and efferent fibres are necessary ; the former are of necessity sensory ; the latter may be motor, vaso-motor, vaso-inhibitory, cardio-inhibitory, or secretory. They are never sensory, for the simple reason that a sensory nerve is always afferent ; and Hart suggests, in place of the reflex theory, the hypothesis of extension of irritation from one nerve centre to an adjacent one. Such phenomena may also be due, as Woakes suggests,¹ to "vascular distension of the sensitive tissues in the region where the pain is appreciated, brought about by implication of vaso-motor nerves."

I agree with Woakes that "though some links in the chain may here and there be missing,—and some lines of impulse may be wrongly traced,—yet when a larger knowledge of the anatomy and physiology of the vaso-motor system is attained, allowing these errors to be rectified, the theory here broached will hold its ground and prove of much wider applicability."

In other cases, where there is exalted impressionability of the nervous apparatus of the throat, the explanation of a dysæsthesia may be that suggested by Arndt² for so-called "co-sensations" or paradoxical sensations. He says: It may happen that a certain excitant which acts upon a particular nerve produces not alone a sensation in the part of the sensorium to which it passes, but that the impressions of this part, on account of the exalted sensibility of another part more or less connected with it, are taken up by this other part. In such cases there are produced, aside from the normal sensation, others, *i.e.*, abnormal ones. Thus, for instance, a slight pressure of the boot produces not alone sensation of pressure in the foot, but headache, etc., etc.

¹ "On Deafness, Giddiness, and Noises in the Head," by Edward Woakes, M.D., London, 1880, 2d ed., p. 79.

² Eulenburg's "Real Encyclopædie der Gesammten Heilkunde," vol iv, p. 532.

Disordered sensations of the throat also occur in pulmonary affections, especially during the course of pulmonary phthisis, and even very early; being more distinct on or limited to the side of the affected lung, and under circumstances when organic laryngeal lesion must be excluded. Jurasz has recorded a case in which they formed a complication of croupous pneumonia.

I have stated that I exclude from present consideration the diminished sensibility during epileptic paroxysms, but sometimes this hypæsthesia persists, and, as in Spaack's case, is observed in the interval.

Rheumatism and gout have been accused of leading to sensory throat neuroses.

When foreign bodies have been lodged in the throat, though removed and though no traumatic effects have been produced, they often leave the sensation of their presence for a long time, and sometimes the mere belief that a foreign body has entered the throat makes the person feel similar symptoms.

Occasionally catarrhal and other organic throat affections leave disordered sensations behind;—and here it must be emphasized that whenever such local disease is found to co-exist with them, they are out of all proportion, sometimes even in no relation therewith, persist after the local lesion is cured, or sometimes are cured while the lesion remains.

Throat dysæsthesiæ dependent on various diseases of the body are discussed in my essay, published many years ago, on "The connection of throat and other diseases."¹

SECTION V.—CAUSES.

In the list of the morbid affections leading to sensory neuroses of the throat I have given a number of causes which, to avoid repetition, I shall not mention now. Pre-

¹ New York, 1870, a reprint from *Medical Gazette*, Jan. 22, 1870.

viously I had stated that, excluding the structural throat lesions which themselves involve the peripheral sensitive nerves and the brain lesions of insanity, there must be affected, in the neuroses under consideration, the respective nerve tracts or their nuclei; that such affection may come from traumatism, from pressure by tumor, foreign body, etc., from circulatory perturbation, or from other disease or injury, I need not dwell upon. Certainly the great ordinary *predisposing* cause of these neuroses is that general nervousness of constitution which is really "the child of civilization and mental culture, of refinement in clothing, food, and dwelling-place, of want of proper physical and muscular exercise," and which has been perpetuated by hereditary influences. Patients may belong to this class of nervous individuals without being at all hysterical or hypochondriacal, or what is commonly called "nervous"; yet they are more than ordinarily impressionable, are of so-called "neuropathic disposition." Of the *exciting* causes, the most frequently assigned by patients themselves is "taking cold"; and though that phrase is sometimes only ignorance-cloaking and meaningless, nevertheless exposure to atmospheric change, draft, the extremes of heat and cold, especially sudden change from one to the other, combined with wet,—is often, in persons predisposed, the only etiological starting-point which the most careful scrutiny can detect. Sometimes this is true of inhaling smoke or dust, or of taking at particular times alcoholic stimulants, or wine, or even coffee, in cases in which not the slightest local effect on the mucous membrane can be detected. Intense intellectual labor or emotional or other excesses, which usually can be regarded as predisposing causes, also occasionally act as exciting causes. I have had a case in which great sexual excitation in a perfectly healthy unmarried female was followed immediately by intense pain in the

throat, which required months of treatment before it could be relieved. Since she has been married, every sexual intercourse causes a temporary return of the throat pain.

When speaking of the fact that foreign bodies, after removal, sometimes leave for a long time disordered sensations behind, I referred to the curious circumstance that sometimes the belief of the presence of a foreign body causes the same subjective symptoms. It almost seems that in nearly every case psychical, either as predisposing or exciting, co-act with other causes in producing a throat dysæsthesia. Strong emotions always increase existing dysæsthesiæ, and I have had abundant proof that they alone, under many circumstances, are sufficient for their production. In families in which one or more members have suffered from severe, especially chronic, throat disease, either constitutional or local, I have several times found a sensory neurosis of the throat affect persons who were and remained absolutely free from structural lesion. In such cases, fear alone seems to be the efficient cause. Just as motor disturbances are recognized, that are dependent on an idea, on emotional attention directed strongly upon a particular part of the body, so such sensory derangements occur, entirely independently of hysteria, hypochondriasis, simulation, or even imagination, so far as this latter word carries with it the idea of unreality. Continued examination of the throat sometimes makes it temporarily over-sensitive; and in some cases hyperæsthesia is observed without any cause, as an idiosyncrasy.

SECTION VI.—SYMPTOMS AND DIAGNOSIS.

The symptoms are mainly subjective, but in both hypæsthesia and hyperæsthesia, there are also objective symptoms, especially when the reflex sensibility is affected.

1. *Hypæsthesia*.—Diminution of sensibility may vary in

different cases from a slight bluntness of feeling to a complete absence; and it is only in the latter case, *i. e.*, in that of loss of sensation, that the term anæsthesia should be used. The diminution may be more or less circumscribed or extensive, unilateral or bilateral, or, if on both sides, greater on one side than on the other. Instead of anæsthesia it is much more common to find a diminution or absence of reaction to impressions that normally should cause pain, *i. e.*, hypalgia or analgesia,—while at the same time the sensation of contact of a body and the reflex reactions of cough, gagging, etc., are only very little impaired. Sometimes pain is felt, spontaneously and in response to external impressions, at the same time that both tactile and reflex sensibility are diminished or lost, a condition which is called anæsthesia dolorosa. Sometimes the reflex re-action is very feeble, while contact and pain are normally felt; while at other times the reflex sensibility is intact or even exalted, and all other sensitiveness lessened. In one case I noticed, in a very intelligent and otherwise healthy female patient of about 34 years, the curious phenomenon of delay of appreciation, *i. e.*, several seconds elapsed before reaction occurred.

As a constant symptom, objective always, and frequently also subjective, *i. e.*, when the patient becomes conscious of it, I call attention to the accumulation of saliva and phlegm in the throat. This is sometimes in the valliculæ, sometimes in the pyriform sinuses, or in both. I do not remember to have seen a well-marked case of hypæsthesia in which this symptom was not present to some extent; and I call special attention to it because, when the patient is not aware of it, and the accumulation is not very abundant, it is apt to be overlooked. Hypæsthesia is accompanied with difficulty of swallowing and “wrong swallowing,” or food passing into the wind-pipe; but this is due less to the in-

sensible condition of the parts than to associated muscular paralysis.

2. *Hyperæsthesia*.—The term hyperæsthesia is frequently used as though it were synonymous with hyperalgia, *i. e.*, increased painfulness. Bristowe,¹ while recognizing the proper meaning of the term, justifies this use because, as he says, "practically exalted sensibility is scarcely, if ever, distinct from painful sensibility." As the rule, this is unquestionably true, although each of the three kinds of sensibility is liable to be exalted alone, or together with one or both of the others. Hyperæsthesia may vary in different cases in degree and extent, in the same manner as hypæsthesia.

When the tactile sensitiveness alone or together with the dolorous is increased, the name "*oxyæsthesia*," meaning simply very sharp or acute sensibility, has sometimes been given to it. I have had a case of a gentleman who could distinguish—and painfully so—the points of my æsthesiometer two millimetres apart in almost every portion of his throat. Hyperæsthesia is sometimes so great, that not only contact but even approximation of a body is sufficient to produce reaction. This ideal reaction—especially reflex—occurs in cases of idiosyncrasy more often than in acquired hyperæsthesia.

When the dolorous sensibility is affected the pain is felt sometimes only when the parts are moved, as during swallowing, speaking, etc.; sometimes spontaneously as well. I have had several cases in which the pain more or less completely interfered with the use of the voice, producing what Coën, of Vienna, first described as phonophobia: in one case, even the slightest whisper caused agonizing pain. Spontaneous pain is sometimes continuous but more usually intermittent or at least remittent. When periodic, it frequently returns at the same

¹ "Theory and Practice of Medicine," London, 1876, p. 932.

time of the day. It is always made worse by strong or sudden emotions, and sometimes disappears and reappears without assignable cause. True neuralgia unquestionably occurs, although the diagnosis in some of the cases reported as such may be questioned. The pains, usually in the front part of the throat and neck, are paroxysmal and flash with momentary intensity along the course of the nerves. Sometimes they are also felt in the back of the throat and in the neighborhood of the tonsils, and sometimes, though more rarely, extended peripherally as well as along the course of nerve fibres.

Occasionally the pains radiate from the throat as a centre to the neck, back, head, shoulders, arms, etc. The symptoms of reflex hyperæsthesia as ordinarily seen consist mainly of muscular contractions, such as retching, gagging, nausea (to vomiting), cough, expiratory spasm, inspiratory spasm, etc. I cannot here take these up in detail but would say that one or several of these may be present, while, at the same time, others and hyperæsthesia of another kind of sensibility, are absent. This is frequently the case in so-called "nervous laryngeal cough," which is a particular phenomenon of reflex hyperæsthesia. The circulatory and secretory effects are to some extent more recondite symptoms of reflex hyperæsthesia. The occurrence of lachrymal and nasal hypersecretion, as well as abundant flow of saliva and phlegm in response to impressions limited to the throat, is of course well known, but the reaction does not end here. No laryngoscopist can have failed to have noticed that perfectly healthy vocal bands are sometimes suddenly temporarily flushed and as suddenly paled, or that the mucous follicles in some part of the throat under his eye momentarily secrete from over-sensitiveness alone.

3. *Paræsthesia*.—Positive symptoms of paræsthesia are entirely subjective. Patients complain of perverted sensa-

tions, which may be referred to one or the other of the three kinds of sensibility, alone or in combination: there may be the spontaneous sensation of itching or scratching; of so-called formication or vermination; of heat, *i. e.*, burning, or cold; of dryness, of weight or pressure, of roughness, or rawness. Generally there is a sensation of the presence of some kind of a foreign body, either stationary or moving about, which may be a hair, a fish-bone, a burr, artificial teeth, a fly crawling about, or something else, which the patient believes has entered his throat. Sometimes there is a sensation of vacuity, of fulness, of stiffness, etc.

The three main classes of perverted feelings are, as I have already said, *sphæræsthesia*, *zonæsthesia* or *strangalæsthesia*, and *akanthæsthesia*, *i. e.*, of a ball- or globe-shaped body, of a cincture or halter, and of a sharp point. The first gives the feeling of fulness, the second of constriction, and the third of piercing. It is impossible to enumerate all the varieties of these classes. The symptoms exceptionally persist uninterruptedly day and night, interfering with sleep; sometimes they are absent for an hour, or a day, or several days, and then return. There is objectively found in cases of *paræsthesia* occasionally more or less *hypæsthesia*, but far more frequently *hyperæsthesia*. In these cases all sorts of pains are described—stinging, cutting, boring, crushing, etc. I am inclined to mention here, as an instance of perverted sensation, the case of a young lady with chronic hypertrophic catarrh, who positively experienced pleasure from applications to her naso-pharynx, which ought to have (*i. e.*, in the vast majority of cases in my experience, decidedly have) given considerable pain. I have, however, counted neither this case nor a few more or less similar cases among the 58 enumerated in this paper.

Diagnosis.—From the symptoms and, in appropriate cases, the *æsthesiometrical* examination, a diagnosis can easily be

arrived at, provided it be certain that there is no structural change present. This latter point can of course not be ascertained without a thorough pharyngo-laryngoscopic examination. *While, on the one hand, great care must be taken not to overlook local lesions,—and special attention should be given to the comparatively less accessible portions of the throat,—on the other, the mistakes must be avoided to regard as such local lesions the reflex effects of disordered sensibility, and to give undue prominence to consequential, unessential, and unrelated local complications.* Errors of diagnosis in all these directions have come under my observation, and were I not forced to content myself in this paper with this passing mention, I should like to refer to the subjects of elongated uvula, the actual presence of a foreign body, or small out-of-the-way ulcer, etc.

Frequent “wrong swallowing”—the tendency of food to pass into the larynx—in the absence of any obstruction to the entrance of food into the stomach, justly makes us suspect hypæsthesia of the throat. Under these circumstances an accumulation of saliva and phlegm strengthens that suspicion; but æsthesiometrical examination alone proves it to be true. Whenever the throat is complained of, especially when swallowing and the use of the voice, either or both, are attended with pain or any unpleasant sensation, in the absence of a local lesion to account for the symptoms, we must suspect hyperæsthesia or paræsthesia. In all such cases æsthesiometrical examination must be instituted. I have already described the manner in which the three kinds of sensibility are examined by means of my æsthesiometer. In the absence of this instrument, laryngeal probes, blunt-pointed and sharp, will answer the purpose except for the differential determination of the sensitiveness to temperature. In determining whether the sensibility is diminished or increased at any point, if one-

sided, we must compare it with what is known as the healthy side, and always with other portions of the throat in relation to the order of acuteness of sensibility which I have presented as a physiological basis, remembering, however, that the list given is a provisional and imperfect one. Unless difference of sensitiveness in one direction or the other is very considerable, we must be cautious in trusting to it. I have pierced the velum with the sharp point of the æsthesiometer, so that it bled, without the patient's feeling more than a contact; and Jurasz has reported a case of diphtheritic anæsthesia in which puncturing the posterior palatine arch on the right side, causing bleeding, was not even felt at all. It is so easy to graduate the strength of the electrical current in most Faradaic apparatuses, that I avail myself, by means of throat electrodes, of this current for determining the point at which the patient experiences pain or any sensation at all,—comparing the strength with that which is appreciated in other portions of the throat or other mucous membranes. On applying the galvanic current, some sensitive points are sometimes found (distinct from Valleix's painful points in the course of nerves in neuralgia) to which Fraenkel has called attention.

The general condition of the patient, the diseases which complicate disordered sensations, and the peculiar character of the symptoms in disappearing and returning and being influenced by psychical circumstances, help to determine the neurotic element in the case.

SECTION VII.—PROGNOSIS.

The prognosis should in all cases be cautiously framed. Sometimes the disorder is very grave. Generally the duration is uncertain, but palliation possible, even if cure is unattainable. Frequently, treatment, though difficult, is successful.

The danger of hypæsthesia comes from "wrong swallowing." A bolus may suffocate the patient, or fatal so-called "food pneumonia" may result from the entrance of food into the air-passages. The danger in hyperæsthesia comes from difficulty of swallowing and from the effects of the irritation of the reflexes upon the general health. In paræsthesia the psychical effects have a tendency to undermine health.

SECTION VIII.—TREATMENT.

The patient's general health should, in all cases of disordered sensation, receive attention; and occasionally nothing more need be prescribed than change of air, travelling, a course of hydropathic treatment, or tonics and alteratives. The proper psychical treatment is also of importance. Always in hypæsthesia, and sometimes in hyperæsthesia and paræsthesia, quinine internally, and by insufflation locally, is especially useful. I have cured recent and slight cases by an emetic. Locally, I have found the frequent use of my "throat educator"—originally devised to overcome the hyperæsthesia interfering with laryngoscopical examinations, and consisting simply of a smooth piece of hard rubber or wood—of more or less benefit in nearly every case of sensory neurosis. Any other instrumental appliance, or, perhaps, the finger, might do as well, but it must not be forgotten that a great deal depends in these neurotic cases upon psychical impression. Sprays of pure and medicated water, either hot or alternately hot and cold, forced into the throat with a pressure of from five to twenty-five pounds; applications, by sponge and brush, of a saturated solution of iodoform in sulphuric ether; and, finally, electricity, induced and dynamic, have served me good purposes in the most varying cases of these disordered sensations.

In addition :

In hypæsthesia I have used internally, phosphorus, and nux vomica,—strychnine, also, by insufflation, and hypodermically (metallo-therapy and quite recently xylotherapy have been recommended); and, if, in swallowing, food enters the larynx, the patient must of course be fed by means of an œsophageal tube.

In hyperæsthesia we have, in the bromides, especially potassium bromide, both internally and locally, and in morphine, dissolved in mucilage, used locally, and hypodermically to produce its general anodyne effects,—agents which temporarily, and, sometimes, permanently, control the disordered sensations. Neuralgic pains are sometimes temporarily relieved by aconitine ointment, externally applied, sometimes by equal parts of camphor, chloral, and chloroform, externally, and sometimes even by ether spray externally. Internally, three-grain doses of mono-bromide of camphor every few hours, or fifteen minims of hydro-bromic acid in water every four hours, have been strongly recommended.

In paræsthesia, besides the general and special treatment already indicated, I have seen occasional good effects from zinc phosphide, zinc cyanide, belladonna, and ergot.

In conclusion I would say, that whenever there are present, in cases of dysæsthesia, any local lesions, they should of course be treated, and if possible cured. Their continuance does sometimes keep up the disordered sensation, although their removal is not always followed by its cessation.

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